

Handbook for Building Officials

Guidelines Concerning the Design

of Structures by

Architects and Engineers

June, 1998

INTRODUCTION

This manual has been jointly published by the Alabama Board for Registration of Architects and the Alabama Board of Licensure for Professional Engineers and Land Surveyors. Its purpose is to aid building officials and design professionals in understanding the laws and administrative rules governing the practice of architecture and engineering in Alabama. It is intended to be a source of basic information and does not attempt to address all of the questions concerning the specific practices of architecture or engineering.

Building codes and professional registration laws are meant to work together. Building officials, the architects registration board and the engineering licensing board each exist to protect the public against unsafe structures. These registration/licensure board officials protect the public by ensuring that all design professionals have proper education and training and pass rigorous examinations on technical and practice issues within their area of expertise. Building officials promulgate and enforce building code requirements that are intended to protect the public's health and safety.

Alabama law has some limited exemptions that permit unregistered or unlicensed persons to prepare plans for single-family houses, farm buildings, or other structures of limited scope. However, it is clear public policy in our state, and indeed all states, that structures of significant size or complexity must be designed by registered/licensed professionals.

Building officials, with their review and inspection processes, are an effective means of protecting the health, safety, and welfare of the public. The building officials are not, however, responsible for the design of buildings and structures. They must rely on competent design professionals to prepare proper documents to assure safe buildings and structures.

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HANDBOOK FOR BUILDING OFFICIALS

INDEX

DEFINITIONS	1
EXEMPT STRUCTURES.....	3
AREAS OF RESPONSIBILITIES FOR ARCHITECTS AND ENGINEERS	4
ALABAMA BUILDING COMMISSION REVIEWS OF CERTAIN STRUCTURES	6
SEALING PROFESSIONAL WORK	8
COMMONLY ASKED QUESTIONS AND ANSWERS	9
STANDARDS FOR BUILDING PLANS AND SPECIFICATIONS SUBMISSIONS.....	12
SPECIAL REQUIREMENTS FOR STRUCTURES SIGNED AND SEALED ONLY BY AN ARCHITECT OR ONLY BY AN ENGINEER.....	15
FORM - BUILDING PERMIT SUPPLEMENTAL INFORMATION.....	Appendix

DEFINITIONS

The Code of Alabama defines the following definitions for the practice of architecture and the practice of engineering as follows:

A. **ARCHITECTURE:** “When an individual holds himself out as able to render or when he does render any service by consultations, investigations, evaluations, preliminary studies, plans, specifications, contract documents and a coordination of all factors concerning the design and observation of construction of buildings or any other service in connection with the design, observation or construction of buildings located within the boundaries of the state, regardless of whether such services are performed in connection with one or all of these duties or whether they are performed in person or as the directing head of an office or organization performing them.” [§34-2-30(2) Code of Alabama, 1975]

B. **ENGINEERING:** “Any professional service or creative work, the adequate performance of which requires engineering education, training, and experience in the application of special knowledge of the mathematical, physical, and engineering sciences to such services or creative work as consultation, testimony, investigation, evaluation, planning, design and design coordination of engineering works and systems, planning the use of land and water, teaching of upper level engineering and design engineering subjects, performing engineering surveys and studies, and the review of construction or other design products for the purpose of monitoring compliance with drawings and specifications; any of which embraces such services or work, either public or private, in connection with any utilities, structures, buildings, machines, equipment, processes, work systems, projects, and industrial or consumer products; equipment of a control, communications, computer, mechanical, electrical, hydraulic, pneumatic or thermal nature, insofar as they involve safeguarding life, health, or property; and including other professional services necessary to the planning, progress, and completion of any engineering services.” [§34-11-1(7) Code of Alabama 1975].

C. **ARCHITECT:** A person who is currently registered in the State of Alabama as an Architect by the Board for Registration of Architects after having completed educational, experience, and examination requirements. *Note: Throughout the rest of this document, the term “architect” means a registered architect as defined above.*

D. **ENGINEER:** A person who is currently licensed in the State of Alabama as a Professional Engineer by the Board of Licensure for Professional Engineers and Land Surveyors after having completed educational, experience, and examination requirements. *Note: Throughout the rest of this document, the term “engineer” means a licensed professional engineer as defined above.*

E. **REGISTERED/LICENSED:** Under Alabama law, an architect is “registered” whereas an engineer or land surveyor is “licensed.” For the intent of this document,

there is no definable difference in the use of these words. Wording hereafter will generally refer to “registered” and this should be construed to mean registered or licensed.

EXEMPT STRUCTURES

The Architects Registration Act provides limited instances where a person who is not registered as an architect may design and supervise the erection or alteration of a building. The following structures are exempt from the registration law requirements:

1. A detached single-family dwelling and any sheds, storage buildings and garages incidental thereto (*See Standard Building Code Congress International, Chapter 311 - Residential Occupancy-Group R*);
2. Farm buildings, including barns, silos, sheds, or housing for farm equipment and machinery, livestock, poultry or storage.
3. Utility works, structures, or building (provided that the person performing such architectural works is employed by an electric, gas, or telephone public utility regulated pursuant to the laws of Alabama or by a corporation affiliated with such utility).
4. Any other type building(s) with a total area less than 2,500 square feet and is not intended for assembly occupancy except schools, churches, auditoriums or other buildings intended for the assembly occupancy of people.
(IMPORTANT NOTE: The Standard Building Code states that buildings less than 5,000 square feet do not require an architect. The State law overrules the building code in this regard).

Similarly, the engineering statutes provide limited instances where an unlicensed person may design and supervise the erection or alteration of various structures in specific circumstances specified by the exemptions. The following are exempt:

1. Practice of engineering or land surveying for the government by officers and employees of the U.S. Government whose compensation is not based on a fee.
2. Practice of engineering or land surveying with respect to transportation or utility facilities by any transportation company or public utility subject to regulation by the Alabama Public Service Commission, Federal Communications Commission, the Federal Energy Regulatory Commission, or the Nuclear Regulatory Commission, or by officers and employees of such a company, its parents, affiliates, or subsidiaries, whose compensation is not based in whole or in part on a fee.
3. The execution as a contractor of work designed by a professional engineer or the supervision of the construction of such work as a foreman or superintendent.

NOTE: Even though a structure may be exempt, certain components may require the services of a professional engineer or an architect.

AREAS OF RESPONSIBILITIES FOR ARCHITECTS AND ENGINEERS

Presented in this section are descriptions of the general areas of responsibility for architects and engineers which elaborate on the statutory definitions of architecture and engineering mentioned above. The descriptions are not all inclusive, but are intended to give general guidance on the practice of the two professions.

A. Architects

Architects must be concerned with the basic concepts of the full spectrum of design considerations. Architects must develop a comprehensive package of design documents for submitting to the building department, taking all aspects of the project into account and coordinating various submissions prepared by other project team members. Listed below are examples of the matters architects typically address:

1. Site layout (e.g., parking, zoning requirements, grading, landscaping, building layout).
2. Aesthetics and overall design.
3. Building classification (e.g., occupancy, type of construction).
4. Building circulation and exiting (e.g., stairway, exit width, travel distances, corridors).
5. Life safety considerations (e.g., requirements for sprinklers, fire ratings, fire walls, separations, fire alarms, smoke control).
6. Interior space planning.
7. Interior and exterior finish materials (e.g., durability, function, aesthetics, fire ratings).
8. Environmental impacts (e.g., sound attenuation, quality of living, impact on natural surroundings).
9. Physically handicapped criteria.
10. Project coordination.
11. Engineering incidental to the practice of architecture.

B. Engineers

Engineers are concerned with the planning, analysis, and design of particular building systems. Through education and training they have detailed knowledge of how specialized components of a building must work. Listed below are examples of areas engineers typically address:

1. Structural systems (e.g., framing, structural connections, foundations).
2. Electrical systems (e.g., power distribution, security, fire alarm, and smoke detection).
3. Mechanical systems (e.g., drains and venting, water distribution systems, HVAC, fire protection system).
4. Soils analysis (e.g., soils reports, soil stabilization, geotechnical investigations).
5. Civil works (e.g., site layout, site drainage, grading, utilities, circulation).

6. Coordination of engineering works (e.g., power stations, dams, bridges, sewage treatment facilities).
7. Project coordination.
8. Architecture incidental to the practice of engineering.

ALABAMA BUILDING COMMISSION REVIEWS OF CERTAIN STRUCTURES

Under state law, designs of certain building types must be reviewed and approved by the State of Alabama Building Commission prior to commencement of construction. Please refer to State of Alabama Building Commission's Manual of Procedures (most current revisions).

As specified in the Manual of Procedures, the following projects require compliance and submittal to the Alabama Building Commission (ABC):

- State agencies, departments, and authorities
- Public schools and college authority (PSCA)
- Post secondary education
- Locally funded public schools, K-12
- Higher education institutions
- Private schools, theaters, and hotels
- Locally funded, local government buildings
- Pre-assembled buildings and portable classrooms
- Buildings lease-purchased by state agencies or departments

The following paragraphs are also copied from the Manual of Procedures:

“REQUIRED EMPLOYMENT OF DESIGN PROFESSIONALS: The Awarding Authority of a public construction or improvement project that is to be supervised and administered by the ABC shall employ the services of registered architects and engineers in accordance with Title 34, Chapter 2 - Architects and Chapter 11 - Engineers and Land Surveyors, Code of Alabama 1975. An architect or architectural firm shall be employed as the primary design professional to design and observe the construction or improvement of a building or facility. An engineer or engineering firm specializing in a certain discipline of engineering may be employed as the primary design professional when the primary purpose and design of the project is within the specialty of the engineer or engineering firm and architectural design is incidental to the overall project design.”

“FULL PROFESSIONAL TEAM: The primary design professional shall employ the services of consulting engineers, and consulting architects in the case of an engineering project, so as to provide a full professional team as dictated by the disciplines of architectural and engineering design involved in the project. Designs of structural, mechanical electrical and other specialized phases of engineering shall be performed by or under the supervision of professional engineers registered in Alabama (See Chapter 3 for exceptions involving “incidental work”). The consultants selected by the primary design professional are to be named in the O/A Agreement and are, therefore, subject to the approval of the Awarding Authority and ABC. The Consulting engineers named

in the O/A Agreement are not changed without the written consent of the Awarding Authority.”

SEALING PROFESSIONAL WORK

Registered architects and engineers are responsible for their professional design services. The public, as well as building officials, expect competence in professional expertise. As a result, professional submissions such as plans, specifications, and calculations should clearly show the identity of the professional who prepared them by having affixed a seal and otherwise complying with the requirements of Alabama law. Without proper identification, ultimate responsibility for any deficiencies may not be clear.

The law and applicable codes in Alabama have requirements that professional submissions must be sealed by the professional who prepared them or supervised their preparation. Section 34-2-35(d) of the Architects Registration Act and Section 34-11-7(c) of the Engineers Licensure Act state that all plans, specifications, plats, and reports prepared by architects and engineers must be stamped with the seal of the responsible professional who is currently registered.

This state has specific laws requiring that plans submitted to governmental agencies bear the seal of a registered architect or engineer as appropriate. Standard Building Code Congress International, Paragraph A103.2.3 states, with respect to non-exempt structures, "all drawings, specifications, and accompanying data shall bear the name and address of the designer" and "such designer shall be an architect or engineer legally registered under the laws of this state regulating the practice of architecture or engineering and shall affix his official seal to said drawings, specifications, and accompanying data."

Building officials should require that all plans have either the seal of an architect or engineer as appropriate, or have a notation on the plans or building permit application noting the state law exemption from the general rule requiring that all plans be prepared by registered professionals.

COMMONLY ASKED QUESTIONS AND ANSWERS

I have a set of plans stamped and signed by an architect registered in a state other than Alabama. Does the plan submittal meet the requirements in Alabama?

No. Only design professionals currently registered with the appropriate board have authority to practice in Alabama. Professionals registered in other states must obtain registration in Alabama in order to practice in this state.

Can an Alabama registered architect or engineer place their stamp on plans prepared and stamped by an out-of-state architect or engineer for submittal in Alabama?

No. An Alabama registered architect or engineer may only prepare and seal drawings prepared by him or her or under his or her direct supervision. Under special circumstances, an engineer can place his/her signature and seal on a document prepared by another engineer if (1) the engineer has reviewed the document in sufficient depth to fully coordinate and assume responsibility for plans prepared by another licensed engineer and (2) the engineer originally producing the work has given consent of the review unless the connection of such engineer with the work has been terminated.

Can an owner/builder/contractor make changes to an architect's or engineer's plans?

No. When plans are prepared by an Alabama registered professional, no changes may be made except by that professional (or under certain conditions by another appropriately registered professional).

May an Alabama licensed engineer prepare and stamp the architectural proportion of building plans?

Alabama law provides that architects or engineers can design structures. However, an engineer can only provide services in which he or she is competent to provide by education or experience. This generally limits the scope of building layout and design to less complicated structures and with smaller human occupancy.

May an Alabama registered architect prepare and stamp engineering documents associated with the structure which the architect designs?

An architect can prepare such engineering documents if he or she is competent to provide the services by education or experience. This generally limits the scope of engineering design to less complicated engineering services.

May anyone other than a registered architect or engineer prepare and submit plans to building officials?

Yes, in limited instances where exceptions in state law noted above permit submission of plans not sealed by a registered professional. Building officials should document for the record at the time a permit is granted the exception in the law that allows design of the structure based on unsealed plans by an unlicensed person.

Do shop drawings have to be sealed by a registered engineer and submitted to the building official for approval?

No, typically shop drawings are intended as contractor or fabricator details. These are not part of the filed plans.

What are examples of component designs which are required to be sealed by an appropriate design professional when submitted to the building official for approval?

Component, or "manufactured," buildings are treated no differently than other buildings. The plans must be prepared and sealed by appropriate professionals registered in this state. Examples of such designs are: prefabricated metal buildings, roof truss systems, post tension or prestress designs and precast concrete building components.

Can a contractor sign the cover sheet of a set of plans prepared by an out-of-state architect or engineer and comply with the law?

No.

If an unregistered designer or owner prepares plans for a non-exempt building and applies for a building permit, should the building official suggest the designer or owner contact an architect or engineer, whichever is appropriate, and have the drawings and specifications reviewed and sealed?

No. Such action on the part of a registered architect or licensed engineer would be contrary to law and would put the professional's registration in jeopardy. A registered architect or engineer may seal only plans prepared by him or her or under his or her direct supervision.

Who may issue change orders and addenda to building permit construction documents which have been filed for non-exempt structures?

Change orders, additional drawings, and/or addenda that alter documents required to be filed with the building department for non-exempt structures must bear the seal of the registered architect or engineer responsible for the modifications. This should generally be the seal of the architect or engineer that originally designed by the project. For special circumstances, another design professional may seal changes or additions to the drawings.

Who can be the applicant for the building permit?

The applicant can be the owner, contractor, authorized agent, or the architect or engineer as appropriate. However, the registered professional's name shall be listed on the application. All modifications or revisions to the sealed plans required by the building official shall be issued to the registered professional by the building official.

What constitutes a valid engineer's document?

Each sheet of plans, drawings, documents, specifications and reports shall be signed, sealed, and dated by the licensed engineer. Where more than one sheet is bound together in one volume, the licensee may sign, seal, and date only the title or index sheet, providing that the signed sheet clearly identifies all of the other sheets comprising the bound volume, and also provided that any of the other sheets which were prepared by, or under the direction and control of, another licensee be signed, sealed and dated by said other licensee.

What constitutes a valid architect's sealed document?

The personal architect's seal is required on all drawings, duplication of drawings, plans, specifications, plats, and reports issued by an architect.

STANDARDS FOR BUILDING PLANS AND SPECIFICATIONS SUBMISSIONS

Plans and specifications submitted to the building official **must be of sufficient detail to clearly show the project in its entirety with emphasis on the following:**

1. Structural integrity
2. Life safety
3. Architectural barriers
4. Building code compliance
5. Definition of scope of work

Following is a suggested standard of drawings for review by building officials. Depending upon the size, nature and complexity of the building, not all of the drawings listed below may be necessary. Also, additions and remodels may not require all of the following for plan submittal and review.

Cover Sheet

1. Project identification
2. Project address and a location map
3. All design professionals identified
4. The principal design professional (the professional responsible for project coordination) shall be identified. All communications should be directed through this individual.
5. Design Criteria list:
 - i. Occupancy group
 - ii. Type of construction
 - iii. Location of property
 - iv. Seismic zone
 - v. Square Footage/Allowable area
 - vi. Fire Sprinklers
 - vii. Height and number of stories
 - viii. Occupant load
 - ix. Land use zone
 - x. Flood zone
 - xi. Soil report
 - xii. Base flood elevation

Site Plan

Show proposed new structure and any existing buildings or structures, all property lines with dimensions, all streets, easements and setbacks. Show all water, sewer, electrical points of connection, proposed service routes and existing utilities on the site. Show all required parking, draining, and grading information. Indicate drainage inflow and outflow locations and specify areas required to be maintained for drainage purposes. When appropriate include a topographical survey. Show north arrow.

Foundation Plan

Show all foundations and footings. Indicate size, locations, thicknesses, materials and strengths and reinforcing. Show all imbedded anchoring such as anchor bolts, hold-downs, post bases, etc. Provide a geotechnical report for the proposed structure at that site.

Floor Plan

Show all floors including basements. Show all rooms, with their use, overall dimensions and locations of all structural elements and openings. Show all doors and windows. Provide door and window schedules. All fire assemblies, area and occupancy separations and draft stops shall be shown.

Framing Plans and Roof Framing Plans

Show all structural members, their size, methods of attachment, location and materials for floors and roofs. Show roof plan.

Exterior Elevations

Show all views. Show all vertical dimensions and heights. Show all openings and identify all materials and show lateral bracing system, where applicable.

Building Sections and Wall Sections

Show materials of construction, non-rated and fire rated assemblies and fire rated penetrations. Show dimensions of all heights.

Mechanical System

Show the entire mechanical system. Include all units, their sizes, mounting details, all duct work and duct sizes. Indicate all fire dampers where required. Provide equipment schedules. Submit energy conservation calculations per State of Alabama.

Plumbing System

Show all fixtures, piping, slopes, materials and sizes. Show point of connections to utilities, septic tanks, pre-treatment sewer systems and water wells.

Electrical System

Show all electrical fixtures (interior, exterior and site) wiring sizes and circuiting, grounding, panel schedules, single line diagrams, load calculations and fixture schedules. Show point of connection to utility.

Structural Calculations

Where required, provide structural calculations for the entire structural system of the project. Show design loads: wind, live, dead.

Specifications

Either on the drawings or in booklet form, further define construction components, covering materials and methods of construction, wall finishes and all pertinent equipment. Schedules may be incorporated in project manual in lieu of drawings.

Addenda and Changes

It is the responsibility of the individual identified on the cover sheet as the principal design professional to notify the building official of any and all changes throughout the project and provide revised plans, calculations or other appropriate documents prior to actual construction.

Revisions

For clarity, all revisions should be identified with a delta symbol (D) and clouded on the drawings or resubmitted as a new plan set.

**SPECIAL REQUIREMENTS FOR STRUCTURES WHERE ALL SHEETS ARE
SIGNED AND SEALED ONLY BY AN ARCHITECT OR ONLY BY AN ENGINEER**

There can be unusual occasions where a building official is faced with reviewing building design plans and supporting electrical, mechanical, and structural plans where all sheets of the plans are signed and sealed by only one professional (such as an architect only or an engineer only). The question then arises, "Is this one professional qualified to sign and seal both architectural design and all engineering design documents?" In the case when only one design professional designs and seals all building documents, the Architect's Registration Board and the Engineer's Licensing Board now require supplemental information to be submitted to the Registration/ Licensing Board by the person signing and sealing the submitted documents. The required supplemental information is shown as an appendix to this handbook.

The supplemental information is required to be mailed or transmitted to the appropriate board prior to or concurrent with the submittal of plans to the building official for review and approval. The appropriate boards have established processes to review the submitted information and, if warranted, can initiate further inquiry or investigation. If Alabama laws or administrative rules are violated, disciplinary action against the design professional could result.

If the building official has concern over (1) the qualification of a single architect or engineer to seal all documents, or (2) the qualifications of a single engineer to sign all of the various engineering disciplines of the design, the appropriate registration/ licensing board may be contacted for guidance.

APPENDIX

State of Alabama Building Permit Supplemental Information

This supplemental information is required only for non-exempt structures where all design documents are sealed only by a Registered Architect or only by a Licensed Professional Engineer. The building official may require a single engineer sealing all the various engineering disciplines of a design to complete this form. Please see instructions on reverse side of this form.

PART 1 — GENERAL INFORMATION ON PROPOSED STRUCTURE

- a. Name of owner(s) and address of proposed building: _____

- b. Description of the use of the building: _____
- c. Proposed number of people to occupy the building: _____
- d. Number of floors in the design and total square feet (include all floors): _____
- e. Estimated total cost of construction, excluding land: _____
- f. Describe structural considerations: _____

- g. Describe proposed heating, ventilating, and air conditioning systems: _____

- h. Describe proposed electrical entrance, protection, and distribution system: _____

PART 2 — INFORMATION ON THE DESIGN PROFESSIONAL SEALING THE WORK

- a. College degree obtained and discipline: _____
- b. Qualifying work experience in fields other than your education specialty: _____

- c. Provide the names and addresses of persons who are familiar with your qualifications and experience: _____


Signed _____ Date _____

Seal

Instructions for completing the form

Building Permit Supplemental Information

The information as shown on the form, properly completed, signed, dated, and sealed by the design professional (architect or professional engineer) is required by the Administrative Codes of the Board of Registration for Architects and by the Board of Licensure for Professional Engineers and Land Surveyors. This information is required only for building structures where all architectural and engineering designs, plans, or certifications are presented for building permit approval and are sealed by only an architect or by only a professional engineer.

 NOTE- The form can be reproduced or produced locally as long as all information is submitted. If more room is needed to answer any questions, addition sheets can be attached.

Part 1:

- a. List the name of the owner and address of the building.
- b. Provide a brief description of how the building will be used, such as warehouse, office building, apartment building, etc.
- c. Specify how many people will normally occupy the building.
- d. List the number of floors for which the building is ultimately designed and the total proposed square feet of floor space.
- e. Total estimated cost including design fees, construction, landscaping, etc.
- f. Describe the structural design of the building, such as timber, post tension concrete, steel frame, etc.
- g. Describe the HVAC systems including types and capacities.
- h. Describe the electrical design of power entrance to the building, lighting, and control systems required.

Part 2:

- a. Describe your education and degree(s) received, such as Bachelor in Architecture, Auburn University, 1974; or Bachelor in Civil Engineering, University of Alabama, 1966. If you do not have a degree in Architecture or Engineering, provide details of your education, including years completed, College or University, and courses completed that would qualify you for performing the design services required for signing and sealing the documents for this building.
- b. Describe breadth and depth of work experiences other than in your education discipline. E.g. an architect should provide information on work experiences in civil, electrical, and mechanical fields. Or, a civil engineer should explain experience in architecture, electrical, and mechanical work.
- c. Provide references that can be contacted to verify experiences and provide information on your qualifications to do the work in the various fields, outside of your education.